Chapter 2

Description of Proposed Action and Alternatives

2.1 Introduction

As described in Chapter 1, Lone Star Northwest wishes to increase its maximum production rate at Maury Island from roughly 10,000 tons per year (the level of production that has occurred in recent years) to up to 7.5 million tons per year (that is, 5.5 million cubic yards).

The applicant also wishes to revise and upgrade their existing Surface Mining Reclamation Permit, which was issued by the Washington State Department of Natural Resources (DNR), in accordance with the 1993 amendments to the state's Surface Mining Act (Revised Code of Washington Chapter 78.44).

This chapter describes the applicant's proposal in detail, as well as two mining alternatives that would involve reduced hours of barging. The No-Action Alternative is also described. Table 2-1 at the end of this chapter compares the features of the alternatives.

2.2 Description of the Proposed Action

2.2.1 Scale of Operation

Under the Proposed Action, sand and gravel extraction could approach 7.5 million tons per year (or 5.5 million cubic yards), with essentially all of the increased material being sent to off-island markets via barge. No barging has been conducted at the site for 20 years. The site contains a conveyor and barge loading dock that were used in past mining operations, as described in Chapter 1. Mining rates would depend on the number of large sand and gravel contracts for off-island markets.

For purposes of predicting the environmental effects of the mining operation, this EIS assesses the site at full production with the mining and barging of 7.5 million tons per year. The mine would

not likely operate at this full production all the time. Nevertheless, this EIS evaluates impacts on noise, aesthetics, marine traffic, light and glare, and other elements of the environment at full production, rather than using average rates. This is to disclose the peak intensity and magnitude of impacts that could occur at any one time.

The expected variability in production is a key element of the proposal and should be considered when evaluating impacts. The Maury Island site provides a relatively uniform product: sand and structural fills. Unlike other mines that have a wide variety of materials, where operations can shift to different materials if demand for one is low, operations at Maury Island would simply slow with reduced demand. When demand for sand is low, the level of operation at the site would also be low. It is even likely that the site would be idle for periods of time, again depending on the market.

It follows that the overall life span of the mine depends on market conditions and the number of large sand and gravel projects secured by the applicant. At full production, the site deposits could be mined out in 11 years. Of course, the lower the level of production, the longer the operation could last. The analysis in this EIS assumes a 35-year operating window before the site is closed.

When discussing the Proposed Action and the alternatives, it is important to note the difference between maximum *daily* production and maximum *annual* production. A major project objective of the applicant is to be able to supply large amounts of material quickly. This increases the applicant's ability to win contracts and to take advantage of peak demands in a variable market. To do this, the applicant wants to be able to barge 24 hours a day, 7 days a week. However, the applicant is not requesting this level of barging to occur over an entire year, but rather to be allowed to operate at this level periodically as contracts are awarded and completed. This is why the maximum *daily* production, if multiplied out over 365 days, would result in nearly twice the amount of material than what the applicant is requesting as the maximum *annual* amount (14.6 million tons versus the proposed 7.5 million tons).

Mining 7.5 million tons of sand and gravel each year could be done under varying configurations and levels of extraction. If mining occurred at the maximum possible rate and barge loading were to occur 24 hours per day (four barges per day), 7.5 million tons of material could be excavated and delivered in about

190 days (i.e., in a little over one-half year). If mining and barge loading were to progress more slowly and evenly throughout the year, the same amount of material could be excavated and delivered over a one-year period, operating 12 hours per day, and loading two barges per day. It is likely that operations under the Proposed Action would actually be somewhere between these two scenarios.

During times when fewer than three barges are loaded in a 24-hour period, then barges would be more likely to be loaded overnight rather than during daytime hours. This is because construction teams typically prefer to have sand and gravel materials delivered in the morning. Nighttime loading is the most efficient way to make morning deliveries.

As under current practices, operations would also provide materials for the local market (Maury Island and Vashon Island). The amount of sand and gravel extracted for the local market was estimated to average approximately 15,000 tons in 1998 (range of 10,000 to 20,000 tons per year) with an annual increase assumed to be 2.5 percent for this EIS analysis; actual increases would depend on market needs and local growth. This would be delivered via truck, at a rate not to exceed 20 trucks per day. At some point, the increase in extraction for the local market would slow and eventually halt, since demand for sand and gravel within the confines of Vashon/Maury Island is limited.

2.2.2 Clearing and Ground Preparation

Clearing of the site would be phased with mining activities. Clearing would occur at scheduled phases of approximately 32 acres each. No more than two phases, or 64 acres of mining/reclamation activities, would be in process at any one time. Prior to mining of each approximately 32-acre phase, vegetation would be cleared and chipped onsite to be used in reclamation. Some large woody material (stumps and logs) would be kept intact to be used as part of the restoration effort, aiding in soil stability, soil organic content, and wildlife habitat.

It is possible that some forest products may be sold, including timber, plant material, fire wood, and landscaping products. Selected native plants may also be salvaged for restoration and revegetation projects throughout Vashon/Maury Island. In some cases, where practical, plants would be moved from the cleared area and be placed within reclaimed areas. Such details would be

worked out as part of the reclamation efforts by the applicant, in cooperation with the Washington DNR.

To address public safety concerns regarding arsenic contamination of site soils, the applicant is proposing to fully contain contaminated materials at the site within a sealed berm. No contaminated materials would be removed from the site. At full capacity (when mining is complete), the berm would measure up to 30 feet high and 2,100 feet long. The berm would be located on the northern edge of the site, but outside of the 50-foot vegetated buffer (described in the next paragraph), which would be maintained. The containment process for soils is described in more detail in Section 2.2.5.

Along the edge of the mining pit, a 50-foot-wide naturally vegetated buffer would be retained around the perimeter of the site. The applicant also proposes specific actions along the bluff face, which is currently naturally eroding, as are many bluffs located along the Puget Sound shoreline. With the exception of the existing dock area, a 200-foot-wide naturally vegetated buffer would be retained along the Puget Sound shoreline. No mining or other activity would be permitted within this buffer.

Maintenance of the 200-foot shoreline buffer and a 50-foot buffer between the site and neighboring properties would result in approximately 14 percent of the site being retained as open space and upland habitat.

2.2.3 Facilities and Equipment

The site contains a relatively uniform product, and, therefore, operations and processing would be relatively simple. Essentially only a few product specifications would be produced at the site, compared to other sites that produce a wide range of products (e.g., different sizes of gravel, mixtures, etc.) requiring complicated sorting, processing, and mixing and associated equipment.

The following sections describe facilities and equipment that would be used for the Proposed Action.

2.2.3.1 Structures

A small office would be placed on the site. Other storage and security areas may be established (such as small fenced yards to protect tools or other valuable items), but no other new permanent structures would be constructed on the site. A portable restroom

facility (i.e., Sanican) and a portable storage container would be located on the site.

The existing dock would require maintenance and repairs, as described in Section 2.2.3.6. Otherwise, the dock would remain as is, with no increase in dimensions.

2.2.3.2 Access and Roads

Access would remain as is, with the main entrance to the site provided from two private driveways from Southwest 260th Street. No major change in these entrances is proposed. Additional haul and access roads would be developed as the site is mined.

2.2.3.3 Heavy Equipment

Sand and gravel would be mined using wheel loaders and dozers. Wheel loaders would be used to load materials onto trucks for direct sales on the island and to feed the portable processing plant (crusher and screening facility) when present. The number of loaders and dozers needed would be based on sales demands, loading rates, size of barges, and type of material. As an estimate for use in this analysis, between one and three loaders and one to four dozers would operate at any one time.

Dozers would be used to excavate materials. They would work from the top of the slope, pushing materials down to a collection point, where material would then be placed in a collection feeder, which delivers materials to the conveyer system.

Watering trucks and fuel/lubricant trucks may occasionally be present onsite.

2.2.3.4 Processing Equipment

The project would include portable screens and potentially a portable crushing plant. Depending on product specifications required by customers, screens would be used to separate some of the gravels that are found in the otherwise clean sand. Gravel would be stockpiled until about 40,000 or 50,000 tons have been collected (which, based on known geologic conditions, would take about 3 to 4 years to accumulate). Once a sufficient amount is present to justify it, a portable crushing plant would be brought to the site. Such a plant takes two people to operate and can crush about 300 tons an hour, so the plant would be at the site for 1 to 2 months every 3 or 4 years.

2.2.3.5 Conveyor and Dock Loading System

For barge-based deliveries, a conveyer belt system would be constructed and used to transport materials from the working face of the mine to a barge moored to the dock. The conveyor would vary in length between 1,200 and 3,400 feet, depending on where mining is taking place. Conveyor width would be from 48 to 54 inches for conveyors from the mine to the barge loading system, and 24 inches for conveyors in any screening or crushing plants.

Distribution of sand and gravel throughout the barge would be accomplished by moving the barge back and forth using a tug while the material is loaded from the conveyor. To eliminate the potential for spillage of sand and gravel into the water, mitigation for the conveyor system would include a splash pan.

The portion of the conveyor system within the Maury Island shoreline, as defined in RCW 90.58.030(2)(d), would require the following repairs:

- Within the shoreline area, the existing conveyor structures are partially located within a tunnel. The ends of this tunnel will be reopened, and the vegetation that has grown around the conveyor structures will be cleared. In addition, approximately five power poles with power lines will be replaced in the same location (north of the dock, parallel to the shoreline, and adjacent to the existing access road) as when the conveyor system was last used.

- Approximately 175 troughing idlers and 50 return idlers will be reinstalled on the existing metal conveyor framework attached to the dock and the existing shoreland conveyor structures. One motor drive will be reinstalled approximately 50 feet from the seaward end of the dock, and an additional motor drive will be relocated on the shoreland conveyor structure approximately 75 feet landward from the ordinary high water mark.

- The rubber conveyor belts will be reinstalled by manually threading them onto and around the idlers. The belt will then be vulcanized by a land-based work crew. The belts will be approximately 54 inches wide, and will curve upward at the sides to a height of approximately 1 foot. A curved plastic or metal tray will be fitted underneath the conveyor belt to catch any material spillage.

- A spill or splash pan will be fitted at the end of the dock to catch any spillage while material is directed onto barges. The

pan will be approximately 66 inches in width and 2 feet in length, and will be curved upward slightly at the sides.

- The equipment necessary to complete the conveyor work includes:
  - a backhoe to clear out existing tunnels where the conveyor structure is located,
  - a work truck with a cutting torch for mechanical work to the idlers,
  - a derrick mounted on a barge to reinstall and set the motor drive, and
  - the basic equipment necessary to replace power poles and string power lines.
- All of the above work should be able to be completed within approximately 15 working days.

2.2.3.6 Dock Repairs

The dock has received some damage from winter storms and other weathering over the past several years. The last repairs, completed about 8 to 10 years ago, included repair and replacement of about 25 pilings in the dolphins and fender pilings. Dolphins are the clusters of freestanding pilings (not attached to the dock) used to guide barges, to prevent barges from hitting the dock, and for barges to tie up to. Fender pilings are those located on the seaward edge of the dock and are used to protect the dock from barges. Some minor repairs were also made to the walkway parallel to the conveyer system.

To ready the dock for reuse, about 30 pilings will need to be replaced. This work would require a pile driver, which is a floating, barge-like vessel mounted with a frame and motorized driver. The vessel would measure about 60 feet wide by 120 feet long and would be fitted with a crane (also called a derrick).

To accomplish the work, the pilot would position the derrick vessel centrally using a series of anchors (two to four, depending on conditions). The vessel is then moved about the work site using electric winches that work up and down the anchor lines.

Timber piles would be driven using an air hammer (probably a Vulcan number 1) run by 600 cubic foot per minute air compressor. To minimize disturbance to the existing sediments,

piles to be replaced would be left in place or cut at the mud line. To avoid introducing chemicals into the area, salvaged timbers would be used (new timbers can exude creosote into the water).

Some pilings would require simple repairs, including refastening and/or "fresh-heading." Fresh-heading is a common maintenance activity that involves pulling the piling up about 3 to 5 feet and then cutting away damaged or rotting wood. About 10 fender pilings at the dock would require this procedure.

Most of the existing dolphins are in relatively good repair, with the exception of one that has failed. This one would be replaced. To replace this dolphin, about 10 pilings would be driven in a circular pattern and then secured at one point. The other dolphins would be refastened with cable as needed and would be bolstered with the addition of pilings (it is estimated that two to three pilings would be added to each dolphin).

About 25 percent of the dock decking, stringers, and supporting timber would need to be replaced or secured.

The necessary repairs are expected to take from 2 to 4 weeks to complete.

2.2.3.7 Signs and Lighting

Warning and traffic signs would be posted around the perimeter of the mining area to inform people of restricted access and potential hazards.

Outdoor and security lights would be shielded with top-clad plates and focused downward to avoid glare onto surrounding areas. Strobe lights are proposed to be used on the back of heavy equipment instead of audible alarms to reduce noise during nighttime operations.

2.2.4 Progression of Mining

The proposed mining activities would start in the central and southern portions of the site, with the northern portion of the site being the last area mined. (See Figures 2-1 and 2-2.)

Mining would proceed in a continual "leading edge," with the area in front of the leading edge being cleared, the edge itself being mined, and the area behind the leading edge being reclaimed. These three active portions of the mining operation would collectively take up between 32 and 64 acres at any one time.

2.2.5 Containment Procedures for Contaminated Soils

The applicant proposes to contain contaminated soils in a lined and covered containment cell located on the north side of the property. No contaminated materials would be removed from the site.

Over the course of mining at the site, about 271,000 cubic yards of materials containing arsenic above residential cleanup levels (as defined under the Model Toxics Control Act [MTCA] Method A) would be excavated and contained. Of this total volume, approximately 50,520 cubic yards would contain arsenic concentrations that are also above industrial cleanup levels (again, using MTCA Method A). These soils above industrial cleanup levels would be managed in a separate phase of the cell that contains thicker or otherwise bolstered covers and linings.

The containment cell would be built along the north side of the property in phases. At full capacity (when mining is complete), the berm would measure up to 30 feet high and 2,100 feet long. The berm would have clean soil placed on top of it, and it would be vegetated. As recommended in Chapter 5, native vegetation would be preferable. Construction of the berm would proceed north to south.

While a bottom liner would not be required (per WAC 173-304-461), a liner and cover would be installed in the containment cell. The applicant is proposing to install a geosynthetic clay liner (GCL). GCLs are made with a layer of refined clay which serves as a barrier to water (permeabilities range from 1×10^{-8} to 10^{-9} centimeters per second). This clay is bound between layers of geotextile. A GCL is considered equivalent to 2 to 4 feet of clay (with a permeability of 1×10^{-7} centimeters per second).

The clay in GCLs would swell as it is exposed to water and this swelling action closes possible openings in the liner.

To protect the GCL liner from damage during installation and construction, a layer of bedding sand 6 inches thick would be placed over the subgrade to protect the liner from puncture by the gravelly soil. The bedding sand would be screened to remove all material larger than ½ inch. The GCL would be covered with a 6-inch layer of drain sand (drain sand should consist of material finer than ½ inch and less than 3 percent finer than the U.S. No. 200 sieve [0.003 inches]).

To address public concerns about water that may accumulate in the cell, a 6-inch-diameter perforated pipe would be installed along the downslope side of the cell. This drain would lead to a collection point on one end of the cell. The purposes of this drain are to prevent build-up of water over the liner and to provide a sampling location. A 2-inch-diameter perforated pipe would be installed in the bedding sand (under the liner) along the north side. This would also lead to a collection point on one end of the cell and could be used to monitor water under the liner.

Contaminated materials collected during site preparation would be placed over the drain sand. The soil would be placed in horizontal layers and compacted to 90 percent density. The purpose of placement and compaction is to provide a stable slope and firm support for the final cover.

Trees and brush would be removed from contaminated areas prior to excavation of contaminated soil. The trees and brush would not be placed into the containment cell (since their decay would generate water). Contaminated soil would contain some natural organic materials such as roots and vegetation, but not sufficient amounts to generate significant water.

The cover would provide the same barrier to infiltration as the liner. The applicant proposes a single-layer synthetic membrane or GCL for the cover. The base for the membrane would be screened soil (finer than 0.5 inch). A flexible membrane would be suitable for the cover because a cover is less susceptible to physical damage than the liner. The flexible membrane would be covered with a geotextile fabric to protect it from damage. The cover would be covered with a 6-inch layer of screened drain sand or synthetic drain layer, the same as used over the liner.

The drain layer would be covered with 18 inches of soil, then the surface would be vegetated. Topsoil would not be required as long as the cover soil has sufficient nutrients to support a healthy vegetation cover. The vegetation is needed to prevent surface erosion and for aesthetics.

The containment cell would be constructed in steps to match the mine operation. The first step would start at the downslope end to collect rainwater infiltration and potential leachate. The first step is expected to take soil from Phase 1 and 2 of the mine operation (or about 46,000 cubic yards of contaminated soil). During soil placement, temporary berms would be constructed upslope to divert rainfall runoff from entering the cells. Some rainfall runoff would seep into the sand drain layer over the GCL during soil

placement. This water would drain into the perforated pipe at the downslope side.

Any water collected from the berm would be tested and handled according to procedures outlined in the MTCA.

2.2.6 Trucking and Barging

On-island trucking and use of material would stay about the same as current conditions, with trucking activity increasing at an assumed rate of 2.5 percent per year (actual increases would be based on market needs and growth).

At maximum mining production, about 40,000 tons of material would be barged off the site each day. The most common barge size would be a 10,000-ton capacity, but smaller barges may be used in some cases. At this maximum production, barges could be loaded almost continuously. At lower production rates, barge loading could occur at any time of day but is most likely to occur at night, since customers tend to like the product delivered in the morning.

2.2.7 Hours of Operation

The Proposed Action is to have no timing restrictions on barge loading so that the applicant can serve customers' needs for morning shipments as needed. Other activities would be restricted to general operating hours of 6 a.m. to 10 p.m. Monday through Friday, and 9 a.m. to 6 p.m. on Saturdays.

2.2.8 Employment

Operations would require 2 to 20 people working two shifts for excavation and three shifts for barge loading. The actual number of people employed onsite would depend on what activities are happening and the volume of material shipped per day. Each person working onsite would be involved in mining, reclamation, and barge loading; it is not possible to specify the number of people working on any particular aspect of the operation.

2.2.9 Reclamation

The Washington State Department of Natural Resources (DNR), rather than King County, oversees restoration efforts for mining at the Maury Island site, as it does state-wide under the authority of surface mining regulations (RCW 78.44). These regulations define reclamation as:

> . . . rehabilitation for the appropriate future use of disturbed areas resulting from surface mining including areas under associated mineral processing equipment and areas under stockpiled materials. Although both the need for and the practicability of reclamation will control the type and degree of reclamation in any specific surface mine, the basic objective shall be to reestablish on a perpetual basis the vegetative cover, soil stability, and water conditions appropriate to the approved subsequent use of the surface mine and to prevent or mitigate future environmental degradation (RCW 78.44.031[11]).

Because the subsequent use of the site is unknown, this EIS assumes that the site would remain undeveloped, with reclaimed areas left to grow into forest and grassland communities (as established in the reclamation plan defined by the DNR). King County may consider a rezone for the property should the owner or others present a proposal for future use other than mining. For this subsequent use, this EIS assumes the appropriate long-term vegetative cover would be native plant communities that are maturing toward the current condition of vegetation onsite. In some cases, non-native grasses and other plants would need to be planted to prevent erosion.

Since the Proposed Action is still at the planning and environmental review stages, restoration plans are still conceptual. This is a fairly standard procedure, since this allows the DNR and the applicant to remain flexible in determining what specifically needs to be done to meet state requirements.

Reclamation would follow DNR guidelines in Best Management Practices for Reclaiming Surface Mines in Washington and Oregon (Open File Report 96-2). Specific restoration plans would be developed in the latter phase of each mining stage, according to specifications stipulated by the DNR.

Consistent with the DNR requirements, site reclamation for the Proposed Action would be accomplished in the following four steps: (1) pre-mining site preparation, (2) slope stabilization and erosion control, including stormwater control and temporary

erosion control measures such as hydroseeding and filter fence check dams, (3) final contouring and topsoil placement, and (4) revegetation with grasses, shrubs, and trees (see Figure 2-3). These steps are described below.

2.2.9.1 Pre-mining Site Preparation

In most cases, vegetation would first be cleared and then soils would be scraped using an excavator or grader. Contaminated soils would be collected and placed within the containment cell located at the northern portion of the property.

2.2.9.2 Slope Stabilization

Active slopes and slopes that have been disturbed but are not yet ready for final reclamation would be protected using Best Management Practices. In general, concerns over slope stability of the active mining phase are minor, since the whole purpose of the operation is to bring the material down. Slides are more of a concern for worker safety, and the operators take care to avoid major slides.

Temporary slope stabilization measures would be employed as necessary to minimize erosion, including hydroseeding, filter fencing, and recontouring. Where appropriate, exposed slopes would be track-walked (up and down) to roughen the ground surface and reduce runoff velocities.

2.2.9.3 Final Contouring and Topsoil Placement

Once an area is mined out and ready for permanent reclamation, slopes would be regraded to gradients less than 2 feet horizontal to 1 foot vertical except where steeper slopes are necessary to match the existing topography. A minimum of 5-foot-wide horizontal benches would be placed in the finished cut slopes for every 20 feet of vertical relief to reduce surface water runoff. The 5-foot-wide benches would be back-sloped slightly into the hillside and laterally sloped to encourage gravity flow.

Because most existing topsoils would be unavailable for reclamation, either soils manufactured onsite, or offsite soils, or a combination of these two materials would be used for reclamation. Onsite topsoils would be prepared using composted and/or mulched organic matter (from cleared vegetation) added to non-contaminated soils and/or sands. Additional soils would be brought in as necessary to assure that reclamation performance standards are met. Reclamation performance would be monitored

by the DNR, under their statutory jurisdiction over mining reclamation within the State of Washington.

Reclaimed slopes would be hydroseeded and covered with a minimum of 1.5 tons/acre straw mulch (tacked down) or equivalent on exposed ground surfaces. The type of seeds used would be determined at the time of seeding. No noxious weeds would be included in the seed mix. Seeding would be planted prior to September in order to have the grass established by October. Hydroseeding would probably be completed by contractors, with specifications detailed in the contract. Specifications would be developed in cooperation with the DNR under their reclamation authority.

2.2.9.4 Revegetation

Mined out areas would be revegetated with various shrubs and trees according to the specifics outlined in the DNR phase reclamation plan. Woody debris from active mine stages would be placed in reclamation areas to provide wildlife habitat.

2.3 Alternative 1- Reduced Barging Hours, Scenario 1

Alternative 1 differs from the Proposed Action in that barge loading would be restricted to 16 hours each weekday and 9 hours on Saturday (Monday – Friday 6 a.m. to 10 p.m., Saturday 9 a.m. to 6 p.m.). This alternative was developed by the EIS team in response to public comments and is intended to allow the applicant, public, and decision makers at King County to compare the environmental impacts of the Proposed Action to this hypothetical scenario of reduced hours for barge loading.

The reduced hours would reduce the ability of the applicant to provide sand and gravel products on demand, and, therefore, does not meet the applicant's project objectives as well as the Proposed Action. The applicant's daily capacity to move material offsite during peak demands would be about half that of the Proposed Action.

The *daily* capacity should not be confused with the *annual* capacity. Under the Proposed Action, the maximum daily capacity would be 40,000 tons, but the maximum annual capacity would be 7.5 million tons (or half of the 14.6 million tons that could be mined if the maximum daily rate of 40,000 tons were to occur every day over an entire year). Under Alternative 1, the maximum

daily capacity would be 20,000 tons on weekdays and 10,000 tons on Saturdays. With these restrictions, the applicant could not possibly mine 7.5 million tons per year, so the maximum annual amount for Alternative 1 has been reduced to 5.72 million tons, or the amount that could be produced assuming maximum daily production with reduced hours for barge loading over an entire year.

This reduced daily capacity may affect the operation in two ways. First, the applicant may receive fewer contracts (or may receive contracts for less material), since the maximum daily production rate may be too low to meet the required delivery schedules of certain contracts. Second, the mine may operate at maximum capacity for longer periods than under the Proposed Action, since it would take approximately twice as long under Alternative 1 for the applicant to deliver a certain quantity of material than under the Proposed Action.

The following sections describe how other features of the mining operation under Alternative 1 compare to those of the Proposed Action (see Table 2-1).

2.3.1 Scale of Operation

Under Alternative 1, sand and gravel extraction could be up to 5.72 million tons per year. Most of the material would be sent to off-island markets via barge. The mine would not likely operate at this level of production all the time. As for the Proposed Action, operations would slow when demand for the product is low, and operations may even stop for periods of time.

At full production, the site deposits could be mined in 15 years. At less than full production, operations could last longer. For this EIS, it is assumed that the site could be operating for up to 40 years.

If mining occurred at the maximum possible rate and barge loading were to occur 16 hours each weekday and 9 hours on Saturdays, as proposed for Alternative 1, 5.72 million tons of material could be excavated annually. If mining were to proceed at a slower rate, the annual volume excavated would be less than 5.72 million tons. Actual operations would most likely vary from the maximum possible, but as for the Proposed Action, environmental impacts of this alternative are addressed at full production rates rather than at average rates.

As under current conditions (and as for the Proposed Action), the mine would provide materials for the local market (Maury Island and Vashon Island). The amount of materials extracted for the local market would average 15,000 tons annually with an annual increase assumed to be 2.5 percent (actual increases would depend on market needs). Because demand for sand and gravel for the local market is limited, extractions for the local market would slow and eventually cease.

2.3.2 Clearing and Ground Preparation

Clearing and ground preparation activities for Alternative 1 would be the same as for the Proposed Action.

2.3.3 Facilities and Equipment

Alternative 1 would require the same facilities and equipment as the Proposed Action.

2.3.4 Progression of Mining

The progression of mining operations for Alternative 1 would be the same as for the Proposed Action, but mining would progress at a slower rate.

2.3.5 Containment Procedures for Contaminated Soils

Contaminated soils would be placed in a containment cell as described for the Proposed Action.

2.3.6 Trucking and Barging

As for the Proposed Action, trucking would remain the same as current conditions; it is assumed that trucking activity would increase at 2.5 percent per year (actual increases would depend on market demands).

At maximum mining production, about 20,000 tons of material would be barged off the site each weekday and about 10,000 tons would be barged on Saturday. The most common barge size would be 10,000 tons, but smaller barges would also be used.

2.3.7 Hours of Operation

Under Alternative 1, mining and barging activities would occur only from 6 a.m. to 10 p.m. Monday through Friday and from 9 a.m. to 6 p.m. on Saturdays.

2.3.8 Employment

Operations under Alternative 1 would require 2 to 20 people working two shifts for excavation and barge loading. The actual number of people onsite would depend on the activities occurring and the volume of material being shipped each day. As for the Proposed Action, it is not possible to specify the number of people working on any particular activity.

2.3.9 Reclamation

Reclamation requirements and activities for Alternative 1 would be the same as for the Proposed Action.

2.4 Alternative 2 - Reduced Barging Hours, Scenario 2

Under Alternative 2, barge loading would be restricted to 12 hours each weekday and on Saturday (Monday - Saturday 7 a.m. to 7 p.m.). As with Alternative 1, Alternative 2 would reduce the ability of the applicant to provide sand and gravel products on demand, and, therefore, does not meet the project objectives as well as the Proposed Action.

The applicant's capacity to move material offsite during peak demands would be only about one-quarter that of the Proposed Action. Again, as with Alternative 1, this may affect the operation in two ways, but potentially at a greater level than with Alternative 1. First, the applicant may receive fewer contracts than under Alternative 1, since the 75 percent reduction in maximum daily production rate may be too low to meet the required delivery schedules of certain contracts. Secondly, for contracts that are secured, the mine would need to operate at maximum capacity for approximately four times the period that would be required under the Proposed Action.

The following sections describe how other features of the mining operation compare to those of the Proposed Action (see Table 2-1).

2.4.1 Scale of Operation

Under Alternative 2, sand and gravel extraction could be up to 3.12 million tons per year. Most of the material would be sent to off-island markets via barge. The mine would not likely operate at this level of production all the time. As for the Proposed Action, operations would slow when demand for the product is low, and operations may even stop for periods of time.

At full production, the site deposits could be mined in 30 years. At less than full production, operations could last longer. For this EIS, it is assumed that the site could be operating for up to 50 years.

If mining occurred at the maximum possible rate and barge loading were to occur 12 hours each weekday and on Saturdays, as proposed for Alternative 2, 3.12 million tons of material could be excavated annually. If mining were to proceed at a slower rate, the annual volume excavated would be less than 3.12 million tons. Actual operations would most likely vary from the maximum possible, but as for the Proposed Action, environmental impacts of this alternative are addressed at full production rates, rather than at average rates.

As under current conditions (and as for the Proposed Action), the mine would provide materials for the local market (Maury Island and Vashon Island). The amount of materials extracted for the local market would average 15,000 tons annually with an annual increase assumed to be 2.5 percent (actual increases would depend on market needs). Because demand for sand and gravel for the local market is limited, extractions for the local market would slow and eventually cease.

2.4.2 Clearing and Ground Preparation

Clearing and ground preparation activities for Alternative 2 would be the same as for the Proposed Action.

2.4.3 Facilities and Equipment

Alternative 2 would require the same facilities and equipment as the Proposed Action.

2.4.4 Progression of Mining

The progression of mining operations for Alternative 2 would be the same as for the Proposed Action, but mining would progress at a slower rate.

2.4.5 Containment Procedures for Contaminated Soils

Contaminated soils would be placed in a containment cell as described for the Proposed Action.

2.4.6 Trucking and Barging

Trucking would remain the same as current conditions; it is assumed that trucking activity would increase at 2.5 percent per year (actual increases would depend on market demands).

At maximum mining production, about 10,000 tons of material would be barged off the site each weekday and on Saturday. The most common barge size would be 10,000 tons, but smaller barges may be used in some cases.

2.4.7 Hours of Operation

Under Alternative 2, active mining would occur only from 7 a.m. to 7 p.m. Monday through Friday and from 9 a.m. to 6 p.m. on Saturdays. Barging would occur from 7 a.m. to 7 p.m. Monday through Saturday.

2.4.8 Employment

Operations under Alternative 2 would require 2 to 20 people working one shift for excavation and barge loading. The actual number of people onsite would depend on the activities occurring and the volume of material being shipped each day. As for the Proposed Action, it is not possible to specify the number of people working on any particular activity.

2.4.9 Reclamation

Reclamation requirements and activities for Alternative 2 would be the same as for the Proposed Action.

2.5 No-Action Alternative

2.5.1 No-Action Alternatives under SEPA

Under SEPA, King County must evaluate the "No-Action Alternative", which is defined by the state SEPA Handbook as "what would be most likely to happen if the proposal did not occur".

In some cases, No-Action can mean little or no impact, such as when bare land is proposed for a major facility, and not implementing the proposal maintains the bare land condition. In other cases, however, such as for a needed new roadway, No-Action could result in increased traffic congestion, reduced safety, and serious reduction in service levels as the unmet need for a new road increases over time. In other cases, particularly those involving a change in land use or rezone, No-Action means that the proposal does not occur but the site would be fully developed anyway under existing zoning.

Because the SEPA rules do not define what the No-Action Alternative must entail, King County has some discretion in its formulation. The applicant already has a permit to extract sand from the site up to roughly 50 feet from the property boundaries (200 feet from the shoreline). For the purpose of comparative analysis and to understand the environmental effects of the applicant's proposal, this EIS considers the No-Action Alternative as the status quo, or essentially how the mine has operated on average over the past 20 years.

It is important to note that should King County decide to not approve the applicant's proposal, something other than the No-Action Alternative evaluated here may result, particularly in light of the current and expected high demand for gravel in the Puget Sound region. However, it would be highly speculative to predict exactly what would result following possible legal challenges or other forms of negotiations. King County determined that to attempt to predict a level of operation that may result from denying the current proposal would confuse the issues, rather than clarify them. Therefore, No-Action is evaluated in this EIS as a continuation of current mining levels and practices.

No-Action, then, assumes ultimate excavation and resource recovery of the mine identical to the Proposed Action, but over a much longer period. It would result in a similar level of terrestrial impact, over a much longer period. The most significant difference

under No-Action is the assumed lack of barging. (Again however, this is not to say that barge loading would be prohibited if the applicant's proposal is denied. The applicant's existing mining and barging rights are not necessarily limited to the No-Action Alternative.)

The features of the No-Action Alternative are summarized and compared to the Proposed Action in Table 2-1 and discussed below.

2.5.2 Facilities and Operation

Under No-Action Alternative, the existing permit would remain as is and extraction would be maintained at an average of 15,000 tons per year (ranging from10,000 to 20,000 tons per year). Under this development alternative, only local markets on the island would be served. At this rate of extraction, the mine would remain in operation indefinitely.

The site currently contains a portable screening plant (the presence of this plant on the site is based on market and job conditions), dock, and conveyor system. The existing dock, which is approximately 1,300 feet in length and 50 feet wide, was constructed in 1968 by Lone Star Industries. While the dock has been maintained and repaired, there is no record of any barge-loading activity over the past 20 years.

Operating hours would remain as currently set: from 7 a.m. to 7 p.m., Monday through Friday, and 9 a.m. to 6 p.m. on Saturdays. Employment would likely be less than five staff; two shifts are possible but unlikely.

Mining under No-Action would proceed similarly to the Proposed Action, but at a much scaled-back rate:

- Extraction - Gravel extraction would use equipment similar to that discussed under the Proposed Action. The major difference is that the conveyor belt to the dock would not be used. Crushing activities onsite would be sporadic as would most extraction activities.

- Sorting and washing - The screening plant would be used to sort and crush the rock. No other processing is envisioned.

- Materials stockpiling - Stockpiling would occur at a much lower rate than the Proposed Action and at a rate similar to the existing condition.

- Water supply and wastewater management - As with the Proposed Action, none would be required. Water for dust control would be trucked into the site.

- Water collection/treatment - Stormwater collection would remain minimal because very little of the site surface would be exposed at any one time. At the current level of extraction, it is likely that stormwater runoff would not increase from the current rate. A new stormwater pond would not be needed.

2.5.3 Containment Procedures for Contaminated Soils

Under No-Action, a much lower volume of soils would require management due to the low level of mining. The method for addressing contaminated soils would be agreed to between the Department of Ecology/King County and the applicant.

2.5.4 Trucking and Barging

Truck activities under the No-Action Alternative are assumed to be identical to the Proposed Action because truck delivery has been the principal activity over the last 20 years. Truck activity would average less than 5 trucks per day, over a 6-day week, with up to 20 trucks per day each way (40 trips). The rate of truck activity would increase the same as discussed for the Proposed Action (assumed annual 2.5 percent increase).

No barging is likely to occur under the No-Action Alternative. The actual operating limits on the existing permit are uncertain, but barge activity is assumed to be minimal or non-existent with the No-Action Alternative.

2.5.5 Reclamation

The same reclamation plan described for the Proposed Action would also apply for No-Action, as required by DNR in the 1971 Surface Mining Reclamation Permit (No. 70-010256), as revised under the 1993 amendments to the Surface Mining Act. The rate of extraction and restoration would be entirely different than the Proposed Action. In some cases, natural revegetation is likely to occur at a faster rate than planned revegetation because of the low rate of extraction.

It is difficult to predict the exact progression of mining over thousands of years. While it is conceivable that contours may eventually reach that of the Proposed Action, this EIS assumes that a much smaller area would be affected within the predictable future. For generations to come, there would be little or no terracing. Slopes would revegetate at a rate exceeding that of new exposure. Restoration would occur to meet the requirements of the existing permit. Seeding would be done as needed but on smaller areas than for the Proposed Action.

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Table 2-1. Comparison of Alternatives Features, Maury Island Mining Operations

Component	*No-Action Alternative*	*Proposed Action*	*Alternative 1*	*Alternative 2*
SCALE OF OPERATION				
Area to be Mined	Ultimately, 193 acres, but much smaller area within the foreseeable future.	193 acres.	Same as Proposed Action.	Same as Proposed Action.
Estimated Maximum Annual Amount of Extraction	20,000 tons	7.5 million tons	5.72 million tons	3.12 million tons
Duration of Project	Mining to occur indefinitely.	Between 11 and 50years. Assumed to be 35 years for analysis in the EIS.	Between 15 and 60 years. Assumed to be 40 years for analysis in the EIS.	Between 30 and 75 years. Assumed to be 50 years for analysis in the EIS.
Local Market Sales	Local market sales would average 15,000 tons annually (range 10,000 to 20,000 tons per year) of sand and gravel, with an annual assumed increase of 2.5%.	Same as No-Action.	Same as No-Action.	Same as No-Action.
Trucking	Average hauling less than 5 trucks/day, over a 6-day week, with a maximum of 20 trucks/day each way (40 one-way trips), assumed to increase at 2.5% annually	Same as No-Action.	Same as No-Action.	Same as No-Action.
Hours of Active Mining	Current hours of mining: M-F 7 am – 7 pm Sat 9 am – 6 pm Maintenance could occur at any time.	M-F 6 am - 10 pm Sat 9 am – 6 pm Maintenance could occur at any time.	M-F 6 am - 10 pm Sat 9 am - 6 pm Maintenance could occur at any time.	M-F 7 am - 7 pm Sat 9 am – 6 pm Maintenance could occur at any time.
Hours of Barge Loading	None	24 hours, 7 days per week	16 hours per weekday, 9 hours on Saturday: M-F 6 am - 10 pm Sat 9 am - 6 pm	12 hours per day, M-Sat 7 am - 7 pm

Table 2-1. Continued

Component	*No-Action Alternative*	*Proposed Action*	*Alternative 1*	*Alternative 2*
Barging	None	Maximum of four 10,000-ton barges loaded in each 24-hour period (or a greater number of smaller barges).	Maximum of two 10,000-ton barges loaded in each weekday and one on Saturday (or a greater number of smaller barges).	Maximum of one 10,000-ton barge loaded in each working day (or a greater number of smaller barges).
Employment	5 staff or fewer would operate the site.	2 to 20 staff would operate the site at any one time, with two shifts for mining and three shifts for barge loading.	2 to 20 staff would operate the site at any one time, with two shifts for mining and for barge loading.	2 to 20 staff would operate the site at any one time, with one shift for mining and for barge loading.
Clearing and Ground Preparation	Conducted in slow progression from the central portion of the site out.	Phased clearing, with two areas up to 32 acres being cleared and prepared for mining at any one time. Up to 64 acres of land being mined or actively reclaimed at any one time.	Same as Proposed Action.	Same as Proposed Action.
FACILITIES AND EQUIPMENT				
Structures	None	Small office, storage and security areas, and portable restroom. Repairs to dock structure.	Same as Proposed Action.	Same as Proposed Action.
Access and Roads	Use existing.	Same as No-Action, but additional roads would be constructed as mining progresses.	Same as Proposed Action.	Same as Proposed Action.
Heavy Equipment	Wheel loaders used to load trucks.	Combination of dozers and wheel loaders used for barge-based projects.	Same as Proposed Action.	Same as Proposed Action.
Processing Equipment	Portable screening plant as needed (expected on site for about a month every 5 to 10 years).	Portable crushing and screening plant as needed (expected on site for 1 to 2 months once every 3 to 4 years).	Same as Proposed Action.	Same as Proposed Action.

Table 2-1. Continued

Component	*No-Action Alternative*	*Proposed Action*	*Alternative 1*	*Alternative 2*
Conveyance Equipment	Material loaded onto trucks for on-island deliveries.	Truck loading for on-island deliveries. Material for off-island deliveries would be transported from mined areas to barges using a conveyer belt system, ranging in length from 1,200 to 3,400 feet.	Same as Proposed Action.	Same as Proposed Action.
RECLAMATION	Low levels of mining would require little reclamation. Most reclamation done in small patches to minimal standards (as required by DNR permit). Little or no terracing for several decades.	Active mining/reclamation confined to 64 acres at one time, up to two 32-acre phases. Reclamation would follow DNR guidelines and may include use of native plants and habitat features for wildlife. Topsoil would be manufactured onsite and augmented with offsite materials as necessary to meet DNR reclamation standards.	Same as Proposed Action.	Same as Proposed Action.
BUFFERS				
Adjacent Property Buffers	50-foot vegetated buffers around perimeter of site.	Same as No-Action.	Same as No-Action.	Same as No-Action.
Shoreline Buffer	200-foot shoreline buffer from ordinary high water mark of Puget Sound.	Same as No-Action.	Same as No-Action.	Same as No-Action.
Stormwater Management	No stormwater pond constructed.	A new stormwater pond would be constructed.	Same as Proposed Action.	Same as Proposed Action.

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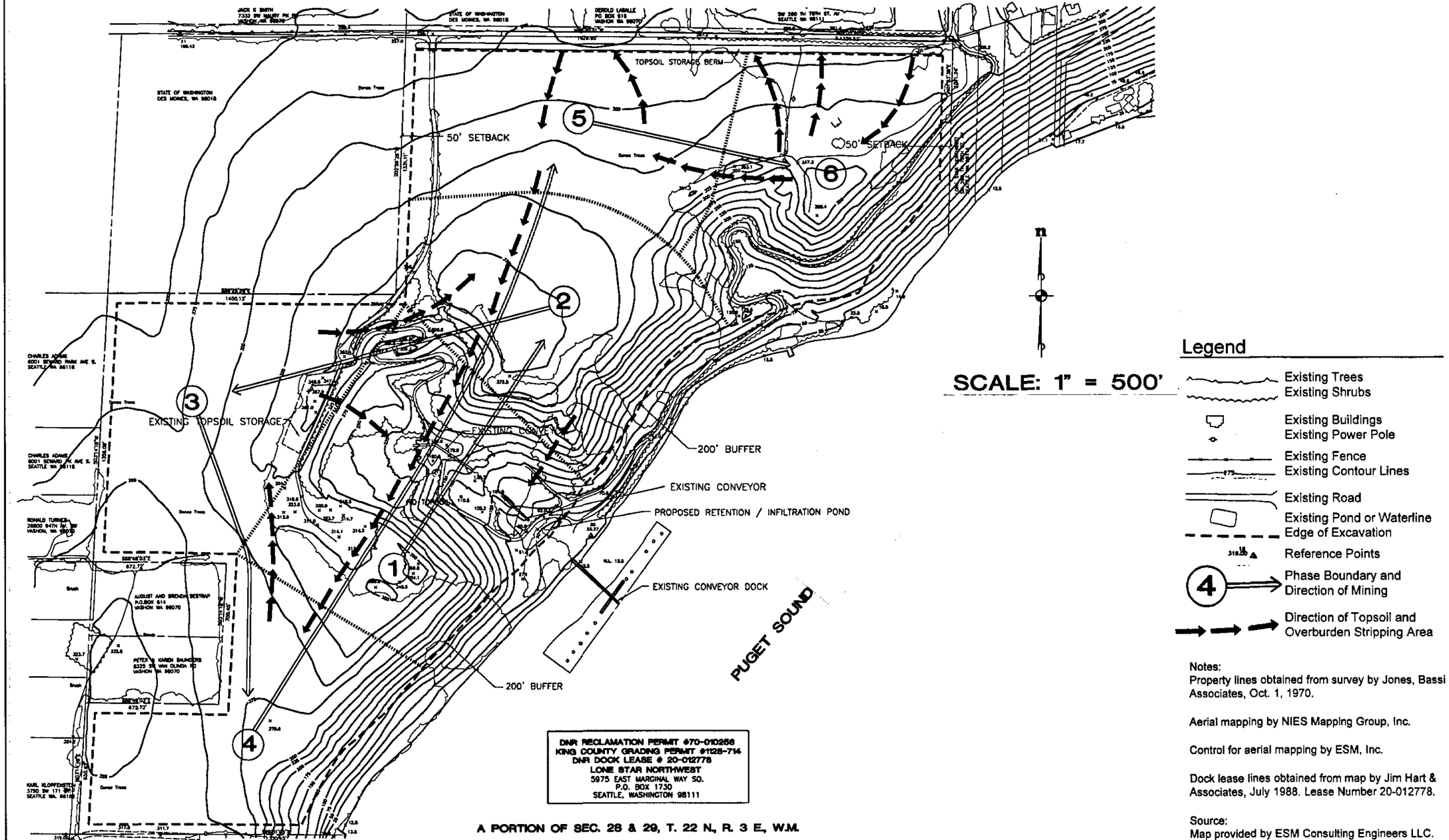
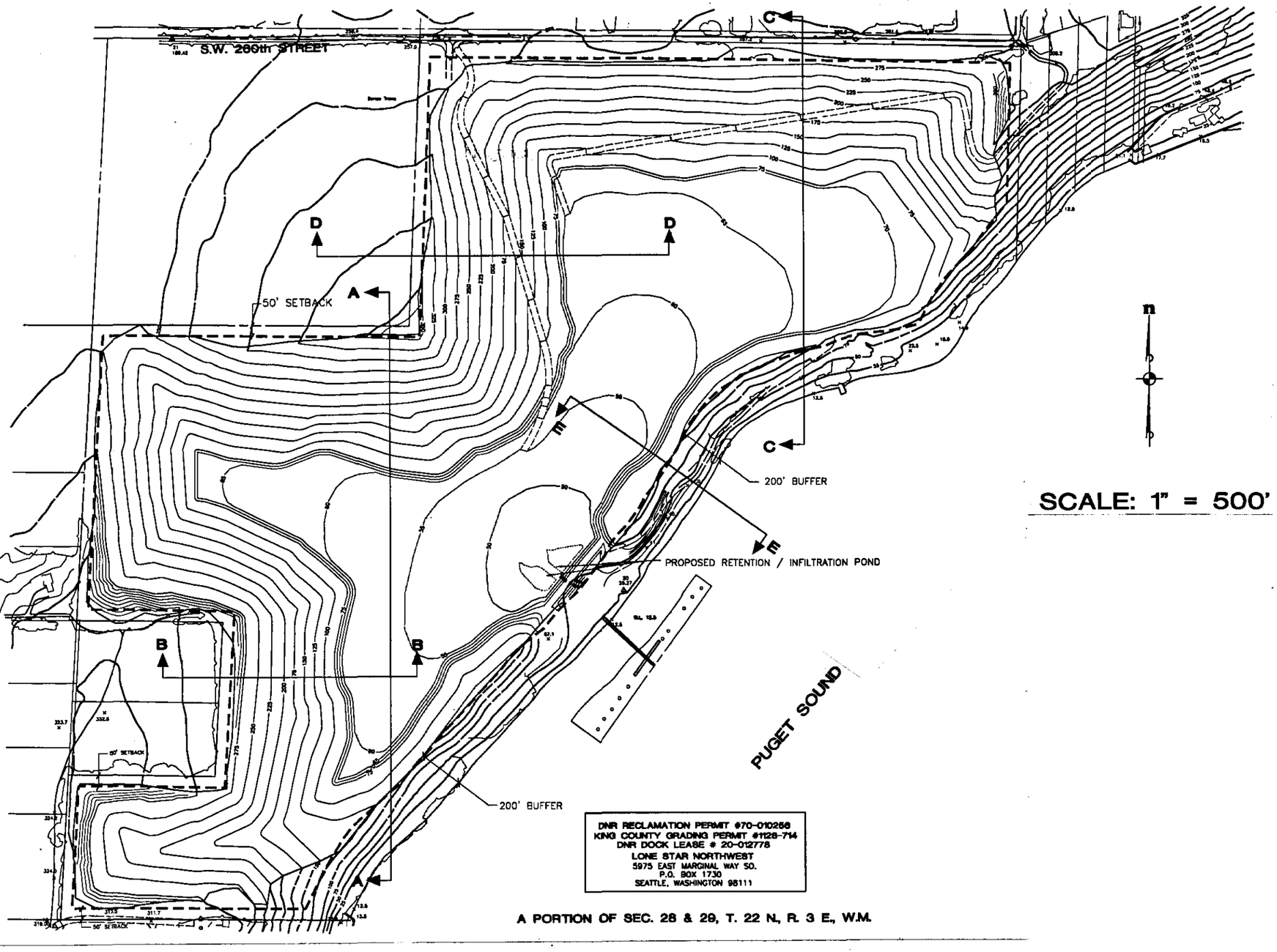


Figure 2-1. Mining Phasing Plan



Note: Containment Cell For Contaminated Soils Is Shown in Figure 10-3.

SCALE: 1" = 500'

Legend

- Existing Trees
- Existing Shrubs
- Existing Buildings
- Existing Power Pole
- Existing Fence
- Existing Contour Lines
- Existing Road
- Existing Pond or Waterline
- Edge of Excavation
- Reference Points
- Cross Sections - see Part 2

Notes:
Property lines obtained from survey by Jones, Bassi & Associates, Oct. 1, 1970.

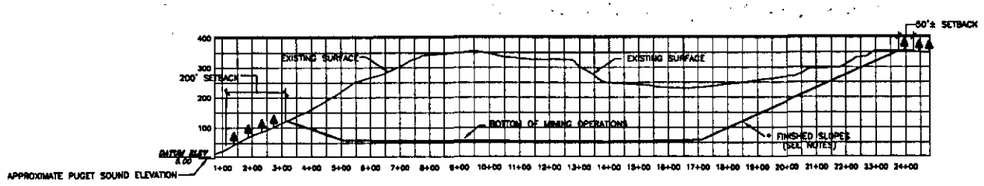
Aerial mapping by NIES Mapping Group, Inc.

Control for aerial mapping by ESM, Inc.

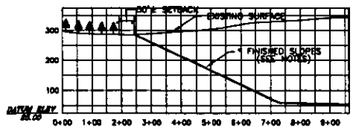
Dock lease lines obtained from map by Jim Hart & Associates, July 1988. Lease Number 20-012778.

Source:
Map provided by ESM Consulting Engineers LLC.

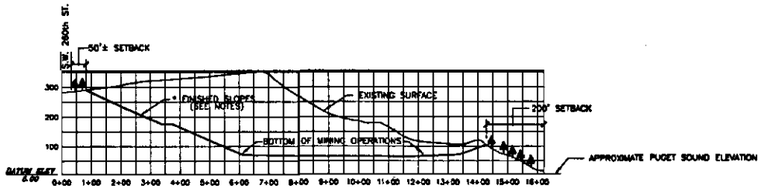
Figure 2-2A. Final Site Contours Part 1



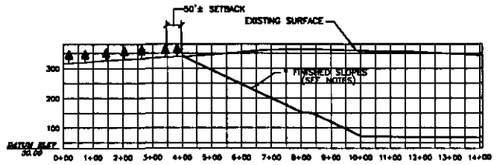
SECTION A-A



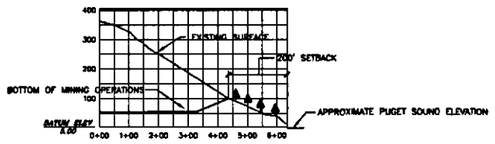
SECTION B-B



SECTION C-C



SECTION D-D

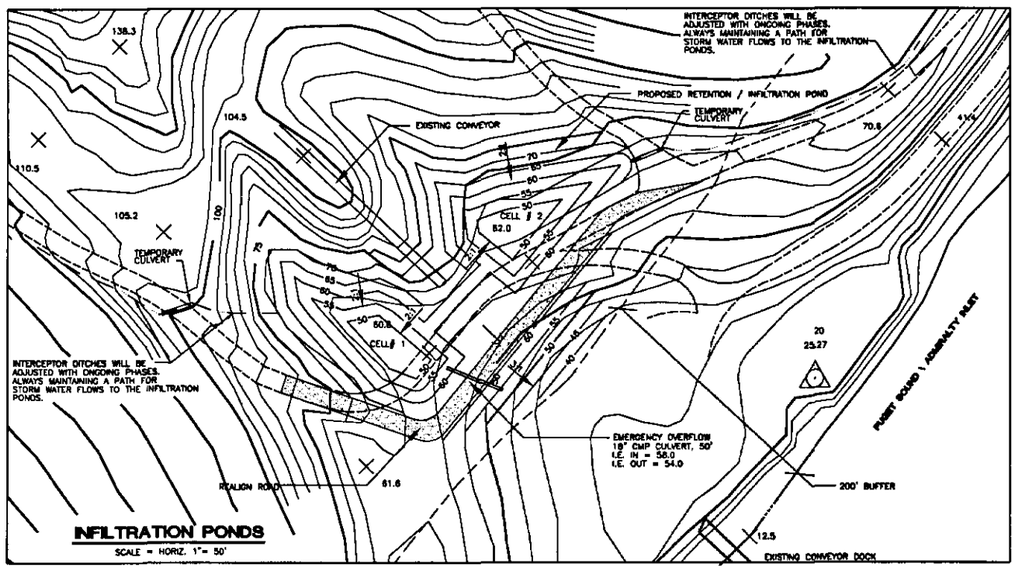


SECTION E-E

* 1. GENERALLY, SLOPES WILL VARY, USUALLY BETWEEN 2:1 AND 3:1. STEEPER SLOPES WILL BE IN LIMITED AREAS TO CREATE SINUOUS TOPOGRAPHY.

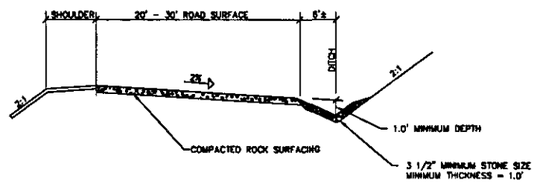
2. 15 FOOT WIDE BENCHES WILL BE ADDED AS NEEDED TO CONTROL EROSION AND SEDIMENTATION

* SCALE = HORIZ. 1"= 200'
VERT. = 1"= 200'



INFILTRATION PONDS

SCALE = HORIZ. 1"= 50'

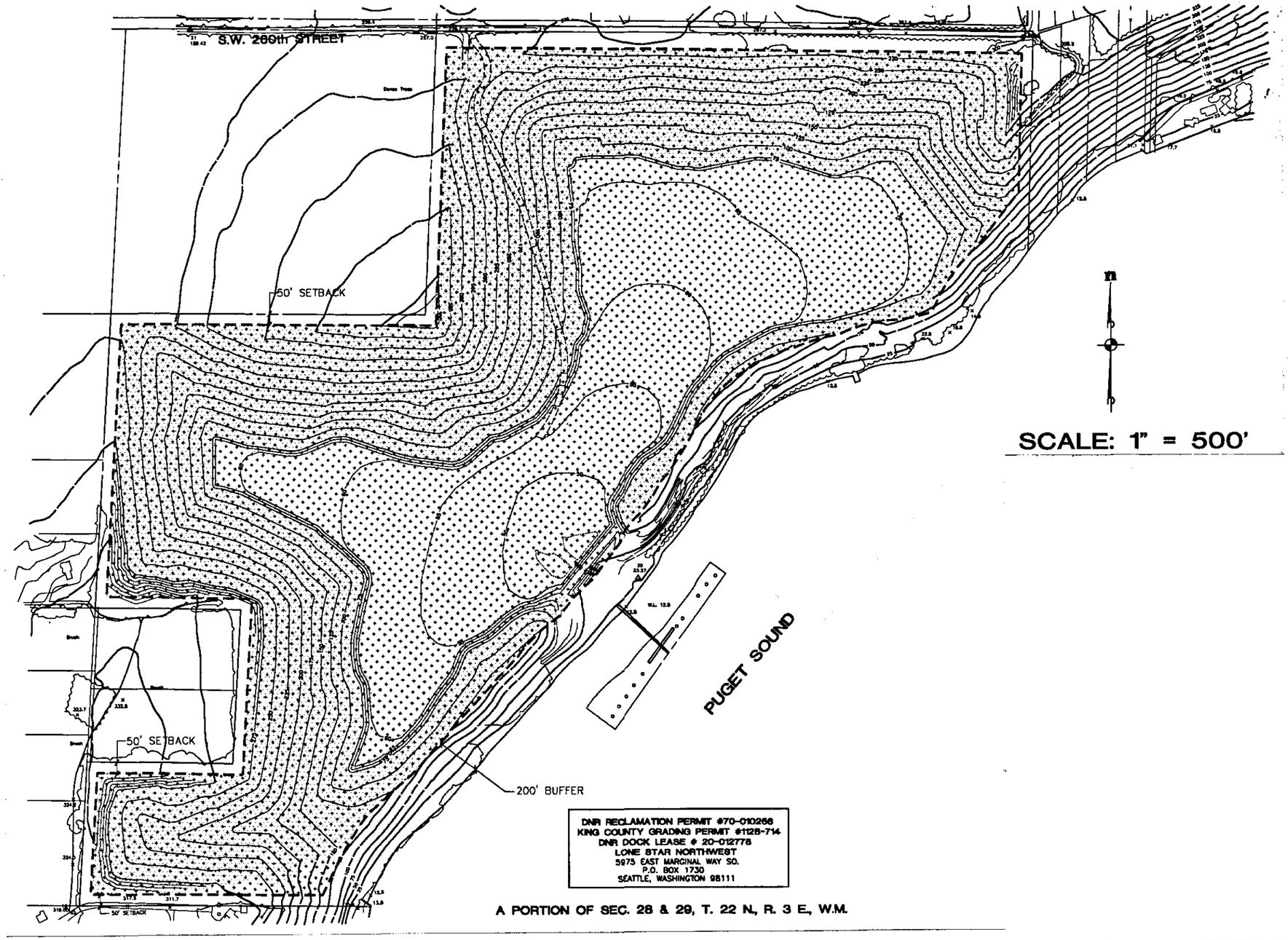


GENERAL HAUL ROAD SECTION

NOT TO SCALE

Source:
Provided by ESM Consulting Engineers LLC.

Figure 2-2B. Final Site Contours Part 2



Legend

- Existing Trees
- Existing Shrubs
- Existing Buildings
- Existing Power Pole
- Existing Fence
- Existing Contour Lines
- Existing Road
- Existing Pond or Waterline
- Edge of Excavation
- Reference Points
- Steep Slope Hydroseeding
- Douglas Fir Seedings (200 per Acre)

Notes:
Property lines obtained from survey by Jones, Bassi & Associates, Oct. 1, 1970.

Aerial mapping by NIES Mapping Group, Inc.

Control for aerial mapping by ESM, Inc.

Dock lease lines obtained from map by Jim Hart & Associates, July 1988. Lease Number 20-012778.

Source:
Map provided by ESM Consulting Engineers LLC.

Figure 2-3. Reclamation Plan